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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,021	12/21/2001	Yasumichi Hitoshi	021044-001210US	6123

20350 7590 03/25/2005

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EXAMINER
YU, MISOOK

ART UNIT	PAPER NUMBER
1642	

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/026,021	HITOSHI ET AL.	
	Examiner	Art Unit	
	MISOOK YU, Ph.D.	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2004 and 13 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) *1-8, 12-14, 17, 19, 39-50* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-11,15,16,18 and 20-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/27/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: Exhibit A

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of group II in the reply filed on 13 September 2004 is acknowledged. The traversal is on the ground(s) that all of the six groups stem from a common concept and theory, and are thus related. As such, examination of all pending claims would not put a serious burden on the examiner. This is not found persuasive because each different inventions use different active ingredients for different effects as explained in the previous Office action, and search of all six different invention put a serious burden on the examiner.

The requirement is still deemed proper and is therefore made FINAL.

Claims 1-8, 39-50 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Claims 12-14, 17, 19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Claims 1-50 are pending, and claims 9-11, 15, 16, 18, 20-38 are examined to the extent they are drawn to the elected species of measuring cellular proliferation. The species election requirement of the different cell lines in claim 29, as set forth in page 3 of the Office action mailed on 8/17/2004, is withdrawn and the search is expanded to other cell lines.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-11, 15, 16, 18, 20-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9-11, 15, 16, 18, 20-38 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: a step that accomplishes the purpose stated in the preamble of the claims. In other words, the claims are missing a step of identifying a compound based on the step (ii).

Claim 9 recites ""under stringent conditions" but it is not clear what the metes and bounds are. The specification at page 15, lines 4-7 discloses "The phrase under stringent hybridization conditions refers to conditions under which a probe will hybridize to its target subsequence, typically in a complex mixture of nucleic acids, but to no other sequences. Stringent conditions are sequence-dependent and will be different in different circumstances." This definition does not reasonably set the claimed property boundary by the limitation. Since what will hybridize would be dependent upon to the hybridization conditions being used, the scope of the claimed invention is indefinite. All the dependent claims, except claim 33 drawn to only one species, are also rejected.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 9-11, 15, 16, 18, 20-32, and 34-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

This rejection is made because the claimed invention is interpreted as drawn to method of identifying a useful compound using a genus of polypeptides encoded by nucleic acids that hybridize under stringent conditions to a nucleic acid encoding SEQ ID NO:2.

The applicable standard for the written description requirement can be found: MPEP 2163; University of California v. Eli Lilly, 43 USPQ2d 1398 at 1407; PTO Written Description Guidelines; Enzo Biochem Inc. v. Gen-Prove Inc., 63 USPQ2d 1609; Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111; and University of Rochester v. G.D. Searle & Co., 69 USPQ2d 1886 (CA FC 2004).

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present in the claims is a partial structure in the form of hybridization under the undefined conditions. The claims do not define any function associated with the claimed genus. Accordingly, in the absence of

sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

Claims 9, and 35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

This rejection is made because the Office interprets the claimed invention as drawn to method of identifying an antisense that modulates cellular proliferation comprising the steps of contacting an antisense to a SAK polypeptide and determining the functional effect of the antisense upon the polypeptide.

The factors considered when determining if the disclosure satisfies the enablement requirement and whether any necessary experimentation is Aundue≅ include, but are not limited to: 1) nature of the invention, 2) state of the prior art, 3) relative skill of those in the art, 4) level of predictability in the art, 5) existence of working examples, 6) breadth of claims, 7) amount of direction or guidance by the inventor, and 8) quantity of experimentation needed to make or use the invention. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

The specification does not teach any method of screening an antisense by contacting an antisense to a SAK protein. Antisense is defined as ""having a complementary sequence to a segment of genetic material (as mRNA) and serving to

inhibit gene function" by Merriam-Webster Online dictionary downed on 3-18-2005 from the url...http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=antisense. This definition indicates that an antisense works at the nucleic acid expression level. In other words, contacting an antisense to "a SAK polypeptide" would not have any effect. The Office cites US 5,650,501 A (22 July 1997) to show the state of art involving an antisense. The '501 patent teaches at columns 26-27 (Example 4) that a method of transfecting an antisense in order to inhibit an SAK encoding gene expression. The '501 patent teaches an antisense inhibits nucleic acid (gene) expression.

Considering the unpredictable state of art, no guidance, no examples in the specification how to use the instantly claimed invention, broad breath of the claims, it is concluded that undue experimentation is required to practice the invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9-11, 15, 16, 18, 24-32, 34, 36, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,650,501 A (IDS AA filed on 06/27/002, 22 July 1997, the '501 patent from now on).

Claims 9-11, 15, 16, 18, 20, 24-32, 34, 36, and 37 are broadly interpreted as drawn to method of identifying a useful compound by determining the phenotypic effect of said compound in cellular proliferation when said compound is contacted with a SAK

polypeptide encoded by a nucleic acid hybridizes under stringent conditions to the nucleic acid encoding the instant SEQ ID NO:2 protein.

The '501 patent teaches SEQ ID NO:3 (a human cDNA) encoding SEQ ID NO:4 (a human SAK protein) that meets the instantly claimed limitation of "a SAK polypeptide encoded by a nucleic acid hybridizes under stringent conditions to the nucleic acid encoding the instant SEQ ID NO:2 protein". Note that the attached sequence alignment (Exhibit A) showing that instant SEQ ID NO:2 and the N-terminal half of SEQ ID NO:4 of the '501 patent have about 90 % homology in protein level, and instant SEQ ID NO:1 and SEQ ID NO:3 of the '501 patent have about 80.9 % local similarity. The Office does not have the facilities and resources to provide the factual evidence needed in order to establish that SEQ ID NO:3 of the '501 patent does not hybridize under the indefinite hybridization conditions to the instant SEQ ID NO:1. In the absence of evidence to the contrary, the burden is on the applicant to prove that the claimed nucleic acid is different from those taught by the prior art and to establish patentable differences. See In re Best 562F.2d 1252, 195 USPQ 430 (CCPA 1977) and Ex parte Gray 10 USPQ 2d 1922 (PTO Bd. Pat. App. & Int. 1989).

As for the contacting a compound the polypeptide, the '501 patent discloses at the line bridging columns 1 and 2 that an antisense to block the expression of SAK inhibits cellular proliferation, i.e. "cell growth was suppressed", and at column 5 lines 5-40 discloses "the method comprises providing a known concentration of a serine/threonine kinase protein of the invention, or an isoform or part of the protein, incubating the kinase protein, isoform or part of the protein with a substance which is a

substrate of the kinase protein, or isoform or part of the protein, and a suspected agonist or antagonist substance, under conditions which permit the phosphorylation of the substrate, and assaying for phosphorylation of the substrate. In a second embodiment, the method comprises providing a known concentration of a serine/threonine kinase protein of the invention, or an isoform or part of the protein, incubating the kinase protein with a substance which is capable of binding to and activating the kinase protein, or isoform or part of the protein, and a suspected agonist or antagonist substance under conditions which permit the formation of substance-protein complexes, and assaying for activation of the kinase protein. The methods of the invention permit the identification of potential stimulators or inhibitors of cell proliferation which will be useful in the treatment of proliferative disorders." In other words, the invention is to discover the antagonist or agonist of cellular proliferation modulated by the activity of SAK polypeptide.

Further, the '501 patent at column 5 line 23-25 teaches "Substance which affect cell proliferation may be identified", and "The invention provides a method for screening for substances having pharmaceutical utility in treatment and diagnosis of proliferative disorders". The '501 patent at column 14 teaches an antibody, method of using the antibody in determining cellular proliferation modulation at column 16, detailed screening assays for measuring cellular proliferation using the SAK polypeptides and other putative medically useful compounds of peptide and antibody from columns 17-20.

As for instant claim 25, and the various cancer cells in claim 26-27, and cancer cells with p53 status of being wild type, the null, or mutant, the '501 patent teaches at

column 19 lines 52-67 "Substances which are capable of binding to the kinase protein of the invention or isoforms or parts thereof, particularly regulators, agonists and antagonists of the binding of regulators and substrates of Sak protein identified by the methods of the invention, antisense nucleic acid molecules of the invention, and antibodies of the invention may be used for stimulating or inhibiting cell proliferation. The regulators, agonists and antagonists, substrates etc. may accordingly be used to stimulate or inhibit cell proliferation associated with disorders including various forms of cancer such as leukemias, lymphomas (Hodgkins and non-Hodgkins), sarcomas, melanomas, adenomas, carcinomas of solid tissue, hypoxic tumors, squamous cell carcinomas of the mouth, throat, larynx, and lung, genitourinary cancers such as cervical and bladder cancer, hematopoietic cancers, head and neck cancers, and nervous system cancers". Since the instant specification is not about which cancer has null, or mutation, or wilt-type in p53, it is the Office's position that various cancer cells of the '501 patent have the different status in p53 gene. The Office does not have the facilities and resources to provide the factual evidence needed in order to establish that the various cancers of the '501 patent do not have the three different p53 status. This determination requires sequencing of all the cancers listed in the '501 patent. In the absence of evidence to the contrary, the burden is on the applicant to prove that the claimed cancer cells are different from those taught by the prior art and to establish patentable differences. See In re Best 562F.2d 1252, 195 USPQ 430 (CCPA 1977) and Ex parte Gray 10 USPQ 2d 1922 (PTO Bd. Pat. App. & Int. 1989).

As for claims 30, and 29, drawn to transformed cancer cell lines, the '501 patent at column 12, line 7 teaches "HeLa" cell.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9, 15, and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,650,501 A (22 July 1997) in view of US 5,959,081 A (28 September 1999, the '081 patent from now on).

Claims 9, 15, and 20-23 are interpreted as drawn to method of identifying a useful compound by determining whether or not said compound modulates cellular proliferation, when said compound is contacted with a SAK polypeptide encoded by a nucleic acid hybridizes under stringent conditions to the nucleic acid encoding the instant SEQ ID NO:2 protein, wherein said cellular proliferation is determined by measuring DNA synthesis or measuring green fluorescent protein.

See 102(b) rejection above for what the '501 patent teaches.

The '501 patent does not teach measuring DNA synthesis as an amount of ^{3}H thymidine incorporation or measuring green fluorescent protein.

However, the '801 patent teaches at columns 24 and 26 that DNA synthesis as an amount of ^{3}H thymidine incorporation or measuring green fluorescent protein

detection are well known techniques in the art before the effective filing date of the instant application.

Therefore, it would have been obvious to one of ordinary skill in the art to use DNA synthesis as an amount of ^{3}H thymidine incorporation or measuring green fluorescent protein detection with a reasonable expectation of success, given that the '501 patent teaches that a SAK protein is involved in cellular proliferation. One of ordinary skill would be motivated to identify a compound that dilutes the green emission as an candidate that might be inhibiting cellular protein, or the compound that inhibits ^{3}H thymidine incorporation in DNA of the cell as a possible candidate for inhibiting cancer cell growth, given that the '501 patent teaches that a SAK protein is involved in cellular proliferation

Claims 9, 37, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,650,501 A (22 July 1997) in view of US 5,589,356 A (31 December 1996, the '356 patent from now on).

Claims 9, 37, and 38 are interpreted as drawn to method of identifying a useful circular peptide by determining whether or not said circular peptide affecting cellular proliferation when said compound is contacted with a SAK polypeptide encoded by a nucleic acid hybridizes under stringent conditions to the nucleic acid encoding the instant SEQ ID NO:2 protein.

See 102(b) rejection above for what the '501 patent teaches.

The '501 patent does not teach a circular peptide.

However, the '356 patent teaches (at the front page) a circular peptide and also teach that a usefulness of a circular peptide as a therapeutic has been recognized in the art before the effective filing date of the instant application (note column 3, lines 3-4).

Therefore, it would have been obvious to one of ordinary skill in the art to add a circular peptide to see whether the circular peptide modulates cellular proliferation, given that the '501 patent teaches that a SAK protein is involved in cellular proliferation and the '356 patent teaches many circular peptides. One of ordinary skill would have been motivated to screen a circular peptide with the art-known detection methods as described by the '501 paten, given that the '356 patent teaches that a circular peptide might be a candidate therapeutic.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MISOOK YU, Ph.D. whose telephone number is 571-272-0839. The examiner can normally be reached on 8 A.M. to 5:30 P.M., every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Siew can be reached on 571-272-0787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Any inquiry of a general nature, matching or filed papers or relating to the status of this application or proceeding should be directed to the Judy Ladringan for Art Unit 1642 whose telephone number is 571-272-0536.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MISOOK YU, Ph.D.
Examiner
Art Unit 1642

GenCore version 5.1.6
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OM protein - protein search, using sw model

Run on: September 23, 2004, 20:59:21 ; Search time 22 Seconds
(without alignments)
2276.236 Million cell updates/sec

Title: US-10-026-021-2
Perfect score: 5078
Sequence: 1 MATCIGEKIEDFKVGNLLGK.....KLQCLSSILLMFSNPTPNFH 970

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 389414 seqs, 51625971 residues

Total number of hits satisfying chosen parameters: 389414

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB	ID	Description
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2	3927.5	77.3	925	2	US-08-834-108-4	Sequence 4, Appli
3	1926	37.9	464	1	US-08-252-995D-6	Sequence 6, Appli
4	1926	37.9	464	2	US-08-834-108-6	Sequence 6, Appli
5	1883.5	37.1	416	1	US-08-252-995D-2	Sequence 2, Appli
6	1883.5	37.1	416	2	US-08-834-108-2	Sequence 2, Appli
7	1370	27.0	273	1	US-08-252-995D-10	Sequence 10, Appl
8	1370	27.0	273	2	US-08-834-108-10	Sequence 10, Appl
9	590.5	11.6	607	2	US-08-878-989-15	Sequence 15, Appl
10	590.5	11.6	607	3	US-09-272-796-15	Sequence 15, Appl
11	578.5	11.4	271	1	US-08-252-995D-11	Sequence 11, Appl
12	578.5	11.4	271	2	US-08-834-108-11	Sequence 11, Appl
13	561.5	11.1	272	1	US-08-252-995D-12	Sequence 12, Appl
14	561.5	11.1	272	2	US-08-834-108-12	Sequence 12, Appl
15	560.5	11.0	685	2	US-08-878-989-1	Sequence 1, Appli
16	560.5	11.0	685	3	US-09-136-282-2	Sequence 2, Appli
17	560.5	11.0	685	3	US-09-272-796-1	Sequence 1, Appli
18	560.5	11.0	685	3	US-09-505-744-2	Sequence 2, Appli
19	545	10.7	603	4	US-09-311-311C-26	Sequence 26, Appl
20	533	10.5	603	3	US-09-198-122-2	Sequence 2, Appli
21	525.5	10.3	272	1	US-08-252-995D-14	Sequence 14, Appl
22	525.5	10.3	272	2	US-08-834-108-14	Sequence 14, Appl
23	508.5	10.0	403	2	US-08-755-728-4	Sequence 4, Appli
24	508.5	10.0	403	2	US-08-974-655-4	Sequence 4, Appli
25	508.5	10.0	403	3	US-09-283-011-4	Sequence 4, Appli
26	498	9.8	722	4	US-08-817-832B-32	Sequence 32, Appl
27	495.5	9.8	722	4	US-09-984-890-4	Sequence 4, Appli
28	490	9.6	275	1	US-08-252-995D-13	Sequence 13, Appl
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34	480	9.5	347	2	US-09-016-000-1	Sequence 1, Appli
35	479.5	9.4	745	4	US-09-523-849-36	Sequence 36, Appl
36	464	9.1	729	2	US-08-677-298-2	Sequence 2, Appli
37	464	9.1	729	4	US-09-523-849-33	Sequence 33, Appl
38	462.5	9.1	633	3	US-08-557-006C-43	Sequence 43, Appl
39	454.5	9.0	556	2	US-09-016-000-4	Sequence 4, Appli
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42	449	8.8	793	4	US-09-523-849-32	Sequence 32, Appl
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44	446.5	8.8	556	4	US-10-096-960-4	Sequence 4, Appli
45	445.5	8.8	1203	4	US-09-799-875-5	Sequence 5, Appli

ALIGNMENTS

RESULT 1
US-08-252-995D-4
; Sequence 4, Application US/08252995D
; Patent No. 5650501
; GENERAL INFORMATION:
; APPLICANT: Dennis, James W
; APPLICANT: Heffernan, Mike
; APPLICANT: Fode, Carol
; TITLE OF INVENTION: NOVEL SERINE/THREONINE KINASE
; NUMBER OF SEQUENCES: 14
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: BERESKIN & PARR
; STREET: 40 King Street West
; CITY: Toronto
; STATE: Ontario
; COUNTRY: Canada
; ZIP: M5H 3Y2
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/252,995D
; FILING DATE: 02-JUN-1994
; CLASSIFICATION: 536
; ATTORNEY/AGENT INFORMATION:
; NAME: Kurdydyk, Linda M
; REGISTRATION NUMBER: 34,971
; REFERENCE/DOCKET NUMBER: 3153-96
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (416) 364-7311
; TELEFAX: (416) 361-1398
; INFORMATION FOR SEQ ID NO: 4:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 925 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-252-995D-4

Query Match 77.3%; Score 3927.5; DB 1; Length 925;
Best Local Similarity 78.6%; Pred. No. 8.4e-296;
Matches 763; Conservative 76; Mismatches 83; Indels 49; Gaps 9;

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Db        61 VKIHCQLKHPSVLELYNYFEDNNYVYLVLEMCHNGEMNRYLKNRMKPFSEREARHFMHQI 120
Qy       121 ITGMLYLHSHGILHRDLTLSNLLLTRNMNIKIADFGLATQLKMPHEKHYTLCGTPNYISP 180
Db       121 ITGMLYLHSHGILHRDLTLSNILLTRNMNIKIADFGLATQLNMPHEKHYTLCGTPNYISP 180
Qy       181 EIATRSAHGLESDVWSLGCMFYTLLIGRPPFDTDTVKNTLNKVVLADYEMPSFLSIEAKD 240
Db       181 EIATRSAHGLESDIWSLGCMSYTLLIGRPPFDTDTVKNTLNKVVLADYEMPAFLSREAQD 240
Qy       241 LIHQLLRRNPADRLSLSSVLDHPFMSRNSSTKSKDLGTVEDSIDSGHATISTAITASSST 300
Db       241 LIHQLLRRNPADRLSLSSVLDHPFMSRNPSPKSKDVGTVEDSMDSGHATLSTTITASSGT 300
Qy       301 SISGSLFDKRRLLIGQPLPNKMTVFPKNKSSTDFSSSGDGNSFYTQWGN--QETSNSGRG 358
Db       301 SLSGSLLD-RRLLVGQPLPNKITVFQKNKNSSDF-SSGDGSNFCTQWGNPEQEANSRGRG 358
Qy       359 RVIQDAEERPHSRYLRRAYSSDRSGTSNSQSQAKTYTMERCHSAEMLSVSKRSGGGENEE 418
Db       359 RVIEDAEERPHSRYLRRAHSSDRASPSN-QSRAKTYSVERCHSVEMLSKPRRS------- 410
Qy       419 RYSPTDNNANIFNFFKEKTSSSSGSFERPDNNQALSNHLCPGKTPPPFADPTPQTETVQQ 478
Db       411 ----------------------------LDENQHSSNHHCLGKTPPPFADQTPQMEMVQQ 442
Qy       479 WFGNLQINAHLRKTTEYDSISPNRDFQGHPDLQKDTSKNAWTDTKVKKNSDASDNAHSVK 538
Db       443 WFGNLQMNAHLGETNEHHTVSPNRDFQDYPDLQ-DTLRNAWTDTRASKNADTSANVHAVK 501
Qy       539 QQNTMKYMTALHSKPEIIQQECVFGSDPLSEQSKTRGMEPPWGYQNRTLRSITSPLVAHR 598
Db       502 QLSAMKYMSAHHHKPEVMPQEP--GLHPHSEQSKNRSMESTLGYQKPTLRSITSPLIAHR 559
Qy       599 LKPIRQKTKKAVVSILDSEEVCVELVKEYASQEYVKEVLQISSDGNTITIYYPNGGRGFP 658
Db       560 LKPIRQKTKKAVVSILDSEEVCVELLRECASEGYVKEVLQISSDGTMITVYYPNDGRGFP 619
Qy       659 LADRPPSPTDNISRYSFDNLPEKYWRKYQYASRFVQLVRSKSPKITYFTRYAKCILMENS 718
Db       620 LADRPPLPTDNISRYSFDNLPEKYWRKYQYASRFIQLVRSKTPKITYFTRYAKCILMENS 679
Qy       719 PGADFEVWFYDGVKIHKTEDFIQVIEKTGKSYTLKSESEVNSLKEEIKMYMDHANEGHRI 778
Db       680 PGADFEVWFYDGAKIHKTENLIHIIEKTGISYNLKNENEVTSLKEEVKVYMDHANEGHRI 739
Qy       779 CLALESIISEEERKTRSAPFFPIIIGRKPGSTSSPKALSPPPSVDSNYPTRDRASFNRMV 838
Db       740 CLSLESVISEEEKRSRGSSFPFIIVGRKPGNTSSPKALSAPP-VDPSCCKGEQASASRLS 798
Qy       839 MHSAASPTQAPILNPSMVTNEGLGLTTTASGTDISSNSLKDCLPKSAQLLKSVFVKNVGW 898
Db       799 VNSAAPPTQSPGLSPSTVTVEGLGHTATATGTGVSSS-----LPKSAQLLKSVFVKNVGW 853
Qy       899 ATQLTSGAVWVQFNDGSQLVVQAGVSSISYTSPNGQTTRYGENEKLPDYIKQKLQCLSSI 958
Db       854 ATQLTSGAVWVQFNDGSQLVVQAGVSSISYTSPDGQTTRYGENEKLPEYIKQKLQCLSSI 913
Qy       959 LLMFSNPTPNF 969
Db       914 LLMFSNPTPNF 924
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RESULT 2
US-08-834-108-4
; Sequence 4, Application US/08834108
; Patent No. 5976893
; GENERAL INFORMATION:
;   APPLICANT:  Dennis, James W
;   APPLICANT:  Heffernan, Mike
;   APPLICANT:  Fode, Carol
;   TITLE OF INVENTION:  NOVEL SERINE/THREONINE KINASE
;   NUMBER OF SEQUENCES:  14
;   CORRESPONDENCE ADDRESS:
;     ADDRESSEE:  BERESKIN & PARR
;     STREET:  40 King Street West
;     CITY:  Toronto
;     STATE:  Ontario
;     COUNTRY:  Canada
;     ZIP:  M5H 3Y2
;   COMPUTER READABLE FORM:
;     MEDIUM TYPE:  Floppy disk
;     COMPUTER:  IBM PC compatible
;     OPERATING SYSTEM:  PC-DOS/MS-DOS
;     SOFTWARE:  PatentIn Release #1.0, Version #1.30
;   CURRENT APPLICATION DATA:
;     APPLICATION NUMBER:  US/08/834,108
;     FILING DATE:
;     CLASSIFICATION:  536
;   ATTORNEY/AGENT INFORMATION:
;     NAME:  Kurdydyk, Linda M
;     REGISTRATION NUMBER:  34,971
;     REFERENCE/DOCKET NUMBER:  3153-210
;   TELECOMMUNICATION INFORMATION:
;     TELEPHONE:  (416) 364-7311
;     TELEFAX:  (416) 361-1398
;  INFORMATION FOR SEQ ID NO:  4:
;   SEQUENCE CHARACTERISTICS:
;     LENGTH:  925 amino acids
;     TYPE:  amino acid
;     TOPOLOGY:  linear
;   MOLECULE TYPE:  protein
US-08-834-108-4

  Query Match             77.3%;  Score 3927.5;  DB 2;  Length 925;
  Best Local Similarity   78.6%;  Pred. No. 8.4e-296;
  Matches  763;  Conservative   76;  Mismatches   83;  Indels   49;  Gaps    9;

Qy         1 MATCIGEKIEDFKVGNLLGKGSFAGVYRAESIHTGLEVAIKMIDKKAMYKAGMVQRVQNE 60
Db         1 MAACIGERIEDFKVGNLLGKGSFAGVYRAESIHTGLEVAIKMIDKKAMYKAGMVQRVQNE 60
Qy        61 VKIHCQLKHPSILELYNYFEDSNYVYLVLEMCHNGEMNRYLKNRVKPFSENEARHFMHQI 120
Db        61 VKIHCQLKHPSVLELYNYFEDNNYVYLVLEMCHNGEMNRYLKNRMKPFSEREARHFMHQI 120
Qy       121 ITGMLYLHSHGILHRDLTLSNLLLTRNMNIKIADFGLATQLKMPHEKHYTLCGTPNYISP 180
Db       121 ITGMLYLHSHGILHRDLTLSNILLTRNMNIKIADFGLATQLNMPHEKHYTLCGTPNYISP 180
Qy       181 EIATRSAHGLESDVWSLGCMFYTLLIGRPPFDTDTVKNTLNKVVLADYEMPSFLSIEAKD 240
Db       181 EIATRSAHGLESDIWSLGCMSYTLLIGRPPFDTDTVKNTLNKVVLADYEMPAFLSREAQD 240
Qy       241 LIHQLLRRNPADRLSLSSVLDHPFMSRNSSTKSKDLGTVEDSIDSGHATISTAITASSST 300
Db       241 LIHQLLRRNPADRLSLSSVLDHPFMSRNPSPKSKDVGTVEDSMDSGHATLSTTITASSGT 300
Qy       301 SISGSLFDKRRLLIGQPLPNKMTVFPKNKSSTDFSSSGDGNSFYTQWGN--QETSNSGRG 358
Db       301 SLSGSLLD-RRLLVGQPLPNKITVFQKNKNSSDF-SSGDGSNFCTQWGNPEQEANSRGRG 358
Qy       359 RVIQDAEERPHSRYLRRAYSSDRSGTSNSQSQAKTYTMERCHSAEMLSVSKRSGGGENEE 418
Db       359 RVIEDAEERPHSRYLRRAHSSDRASPSN-QSRAKTYSVERCHSVEMLSKPRRS------- 410
Qy       419 RYSPTDNNANIFNFFKEKTSSSSGSFERPDNNQALSNHLCPGKTPPPFADPTPQTETVQQ 478
Db       411 ----------------------------LDENQHSSNHHCLGKTPPPFADQTPQMEMVQQ 442
Qy       479 WFGNLQINAHLRKTTEYDSISPNRDFQGHPDLQKDTSKNAWTDTKVKKNSDASDNAHSVK 538
Db       443 WFGNLQMNAHLGETNEHHTVSPNRDFQDYPDLQ-DTLRNAWTDTRASKNADTSANVHAVK 501
Qy       539 QQNTMKYMTALHSKPEIIQQECVFGSDPLSEQSKTRGMEPPWGYQNRTLRSITSPLVAHR 598
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Db       2554 CAGGTGATTGAAAAGACAGGGAAGTCTTACACTTTAAAAAGTGAAAGTGAAGTTAATAGC 2613
Qy       2281 TTGAAAGAGGAGATAAAAATGTATATGGACCATGCTAATGAGGGTCATCGTATTTGTTTA 2340
Db       2614 TTGAAAGAGGAGATAAAAATGTATATGGACCATGCTAATGAGGGTCATCGTATTTGTTTA 2673
Qy       2341 GCACTGGAATCCATAATTTCAGAAGAGGAAAGGAAAACTAGGAGTGCTCCCTTTTTCCCA 2400
Db       2674 GCACTGGAATCCATAATTTCAGAAGAGGAAAGGAAAACTAGGAGTGCTCGCTTTTTCCCA 2733
Qy       2401 ATAATCATAGGAAGAAAACCTGGTAGTACTAGTTCACCTAAGGCCTTATCACCTCCTCCT 2460
Db       2734 ATAATCATAGGAAGAAAACCTGGTAGTACTAGTTCACCTAAGGCCTTATCACCTCCTCCT 2793
Qy       2461 TCTGTGGATTCAAATTACCCAACGAGAGATAGAGCATCTTTCAACAGAATGGTCATGCAT 2520
Db       2794 TCTGTGGATTCAAATTACCCAACGAGAGATAGAGCATCTTTCAACAGAATGGTCATGCAT 2853
Qy       2521 AGTGCTGCTTCTCCAACACAGGCACCAATCCTTAATCCCTCTATGGTTACAAATGAAGGA 2580
Db       2854 AGTGCTGCTTCTCCAACACAGGCACCAATCCTTAATCCCTCTATGGTTACAAATGAAGGA 2913
Qy       2581 CTTGGTCTTACAACTACAGCTTCTGGAACAGACATCTCTTCTAATAGTCTAAAAGATTGT 2640
Db       2914 CTTGGTCTTACAACTACAGCTTCTGGAACAGACATCTCTTCTAATAGTCTAAAAGATTGT 2973
Qy       2641 CTTCCTAAATCAGCACAACTTTTGAAATCTGTTTTTGTGAAAAATGTTGGTTGGGCTACA 2700
Db       2974 CTTCCTAAATCAGCACAACTTTTGAAATCTGTTTTTGTGAAAAATGTTGGTTGGGCTACA 3033
Qy       2701 CAGTTAACTAGTGGAGCTGTGTGGGTTCAGTTTAATGATGGGTCCCAGTTGGTTGTGCAG 2760
Db       3034 CAGTTAACTAGTGGAGCTGTGTGGGTTCAGTTTAATGATGGGTCCCAGTTGGTTGTGCAG 3093
Qy       2761 GCAGGAGTGTCTTCTATCAGTTATACCTCACCAAATGGTCAAACAACTAGGTATGGAGAA 2820
Db       3094 GCAGGAGTGTCTTCTATCAGTTATACCTCACCAAATGGTCAAACAACTAGGTATGGAGAA 3153
Qy       2821 AATGAAAAATTACCAGACTACATCAAACAGAAATTACAGTGTCTGTCTTCCATCCTTTTG 2880
Db       3154 AATGAAAAATTACCAGACTACATCAAACAGAAATTACAGTGTCTGTCTTCCATCCTTTTG 3213
Qy       2881 ATGTTTTCTAATCCGACTCCTAATTTTCATTGA 2913
Db       3214 ATGTTTTCTAATCCGACTCCTAATTTTCATTGA 3246
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RESULT 2
US-08-252-995D-3
; Sequence 3, Application US/08252995D
; Patent No. 5650501
;  GENERAL INFORMATION:
;    APPLICANT:  Dennis, James W
;    APPLICANT:  Heffernan, Mike
;    APPLICANT:  Pode, Carol
;    TITLE OF INVENTION:  NOVEL SERINE/THREONINE KINASE
;    NUMBER OF SEQUENCES:  14
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  BERESKIN & PARR
;      STREET:  40 King Street West
;      CITY:  Toronto
;      STATE:  Ontario
;      COUNTRY:  Canada
;      ZIP:  M5H 3Y2
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.30
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/252,995D
;      FILING DATE:  02-JUN-1994
;      CLASSIFICATION:  536
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Kurdydyk, Linda M
;      REGISTRATION NUMBER:  34,971
;      REFERENCE/DOCKET NUMBER:  3153-96
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (416) 364-7311
;      TELEFAX:  (416) 361-1398
;  INFORMATION FOR SEQ ID NO:  3:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  3447 base pairs
;      TYPE:  nucleic acid
;      STRANDEDNESS:  single
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  cDNA
;    ORIGINAL SOURCE:
;      ORGANISM:  Mus musculus
;      DEVELOPMENTAL STAGE:  Lymphoid cDNA Library
;    IMMEDIATE SOURCE:
;      LIBRARY:  Murine Lymphoid
;      CLONE:  WGA-resistant chop clones
;    FEATURE:
;      NAME/KEY:  5'UTR
;      LOCATION:  1..205
;    FEATURE:
;      NAME/KEY:  CDS
;      LOCATION:  206..2980
;    FEATURE:
;      NAME/KEY:  3'UTR
;      LOCATION:  2981..3447
US-08-252-995D-3

  Query Match           64.5%;  Score 1879;  DB 1;  Length 3447;
  Best Local Similarity  80.9%;  Pred. No. 0;
  Matches 2362;  Conservative    0;  Mismatches  410;  Indels  147;  Gaps    9;

Qy         1 ATGGCGACCTGCATCGGGGAGAAGATCGAGGATTTTAAAGTTGGAAATCTGCTTGGTAAA 60
Db       206 ATGGCGGCGTGCATCGGGGAGAGGATCGAGGACTTTAAGGTTGGAAATCTACTCGGTAAA 265
Qy        61 GGATCATTTGCTGGTGTCTACAGAGCTGAGTCCATTCACACTGGTTTGGAAGTTGCAATC 120
Db       266 GGATCATTTGCTGGTGTCTACAGAGCTGAGTCCATACACACTGGTTTGGAAGTTGCAATC 325
Qy       121 AAAATGATAGATAAGAAAGCCATGTACAAAGCAGGAATGGTACAGAGAGTCCAAAATGAG 180
Db       326 AAAATGATAGATAAGAAAGCCATGTACAAAGCTGGAATGGTACAGAGAGTCCAAAATGAG 385
Qy       181 GTGAAAATACATTGCCAATTGAAACATCCTTCTATCTTGGAGCTTTATAACTATTTTGAA 240
Db       386 GTGAAAATACATTGCCAGTTGAAACACCCCTCTGTCTTGGAGCTCTATAATTACTTTGAA 445
Qy       241 GATAGCAATTATGTGTATCTGGTATTAGAAATGTGCCATAATGGAGAAATGAACAGGTAT 300
Db       446 GATAACAATTATGTCTACCTGGTATTGGAAATGTGCCACAATGGAGAAATGAACAGATAT 505
Qy       301 CTAAAGAATAGAGTGAAACCCTTCTCAGAAAATGAAGCTCGACACTTCATGCACCAGATC 360
Db       506 CTGAAGAACAGAATGAAGCCTTTCTCAGAAAGGGAAGCTAGGCACTTCATGCACCAGATT 565
Qy       361 ATCACAGGGATGTTGTATCTTCATTCTCATGGTATACTACACCGGGACCTCACACTTTCT 420
Db       566 ATCACAGGAATGTTATATCTTCATTCTCATGGCATATTGCACCGGGACCTCACACTCTCT 625
Qy       421 AACCTCCTACTGACTCGTAATATGAACATCAAGATTGCTGATTTTGGGCTGGCAACTCAA 480
Db       626 AACATCTTACTTACGCGGAATATGAACATAAAAATTGCTGACTTTGGACTAGCAACGCAG 685
Qy       481 CTGAAAATGCCACATGAAAAGCACTATACATTATGTGGAACTCCTAACTACATTTCACCA 540
Db       686 TTGAATATGCCACATGAAAAGCACTATACACTCTGTGGGACTCCTAATTATATTTCACCA 745
Qy       541 GAAATTGCCACTCGAAGTGCACATGGCCTTGAATCTGATGTTTGGTCCCTGGGCTGTATG 600
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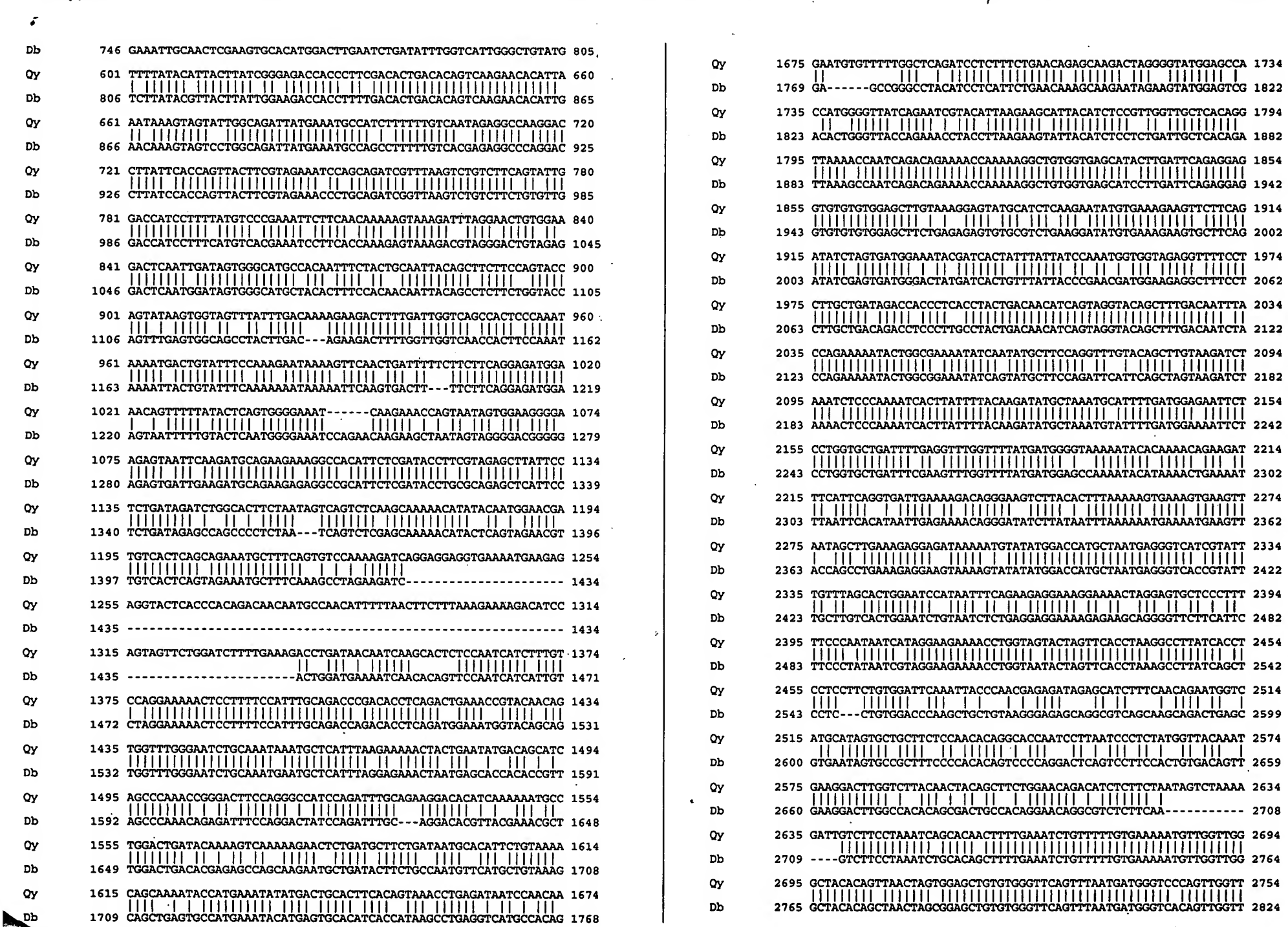

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Qy     2755 GTGCAGGCAGGAGTGTCTTCTATCAGTTATACCTCACCAAATGGTCAAACAACTAGGTAT 2814
Db     2825 GTCCAGGCAGGAGTATCTTCCATCAGTTACACATCACCAGATGGTCAGACAACTAGGTAT 2884

Qy     2815 GGAGAAAATGAAAAATTACCAGACTACATCAAACAGAAATTACAGTGTCTGTCTTCCATC 2874
Db     2885 GGAGAAAATGAAAAATTACCTGAATACATCAAACAGAAATTACAGTGTCTTTCTTCCATC 2944

Qy     2875 CTTTTGATGTTTTCTAATCCGACTCCTAATTTTCATTGA 2913
Db     2945 CTTCTGATGTTTTCTAATCCAACTCCTAATTTTCAGTAA 2983
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RESULT 3
US-08-834-108-3
; Sequence 3, Application US/08834108
; Patent No. 5976893
; GENERAL INFORMATION:
; APPLICANT: Dennis, James W
; APPLICANT: Heffernan, Mike
; APPLICANT: Fode, Carol
; TITLE OF INVENTION: NOVEL SERINE/THREONINE KINASE
; NUMBER OF SEQUENCES: 14
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: BERESKIN & PARR
; STREET: 40 King Street West
; CITY: Toronto
; STATE: Ontario
; COUNTRY: Canada
; ZIP: M5H 3Y2
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/834,108
; FILING DATE:
; CLASSIFICATION: 536
; ATTORNEY/AGENT INFORMATION:
; NAME: Kurdydyk, Linda M
; REGISTRATION NUMBER: 34,971
; REFERENCE/DOCKET NUMBER: 3153-210
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (416) 364-7311
; TELEFAX: (416) 361-1398
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 3447 base pairs
; TYPE: nucleic acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; MOLECULE TYPE: cDNA
; ORIGINAL SOURCE:
; ORGANISM: Mus musculus
; DEVELOPMENTAL STAGE: Lymphoid cDNA Library
; IMMEDIATE SOURCE:
; LIBRARY: Murine Lymphoid
; CLONE: WGA-resistant chop clones
; FEATURE:
; NAME/KEY: 5'UTR
; LOCATION: 1..205
; FEATURE:
; NAME/KEY: CDS
; LOCATION: 206..2980
; FEATURE:
; NAME/KEY: 3'UTR
; LOCATION: 2981..3447
US-08-834-108-3

Query Match 64.5%; Score 1879; DB 2; Length 3447;
Best Local Similarity 80.9%; Pred. No. 0;
Matches 2362; Conservative 0; Mismatches 410; Indels 147; Gaps 9;

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Qy        1 ATGGCGACCTGCATCGGGGAGAAGATCGAGGATTTTAAAGTTGGAAATCTGCTTGGTAAA 60
Db      206 ATGGCGGCGTGCATCGGGGAGAGGATCGAGGACTTTAAGGTTGGAAATCTACTCGGTAAA 265

Qy       61 GGATCATTTGCTGGTGTCTACAGAGCTGAGTCCATTCACACTGGTTTGGAAGTTGCAATC 120
Db      266 GGATCATTTGCTGGTGTCTACAGAGCTGAGTCCATACACACTGGTTTGGAAGTTGCAATC 325

Qy      121 AAAATGATAGATAAGAAAGCCATGTACAAAGCAGGAATGGTACAGAGAGTCCAAAATGAG 180
Db      326 AAAATGATAGATAAGAAAGCCATGTACAAAGCTGGAATGGTACAGAGAGTCCAAAATGAG 385

Qy      181 GTGAAAATACATTGCCAATTGAAACATCCTTCTATCTTGGAGCTTTATAACTATTTTGAA 240
Db      386 GTGAAAATACATTGCCAGTTGAAACACCCCTCTGTCTTGGAGCTCTATAATTACTTTGAA 445

Qy      241 GATAGCAATTATGTGTATCTGGTATTAGAAATGTGCCATAATGGAGAAATGAACAGGTAT 300
Db      446 GATAACAATTATGTCTACCTGGTATTGGAAATGTGCCACAATGGAGAAATGAACAGATAT 505

Qy      301 CTAAAGAATAGAGTGAAACCCTTCTCAGAAAATGAAGCTCGACACTTCATGCACCAGATC 360
Db      506 CTGAAGAACAGAATGAAGCCTTTCTCAGAAAGGGAAGCTAGGCACTTCATGCACCAGATT 565

Qy      361 ATCACAGGGATGTTGTATCTTCATTCTCATGGTATACTACACCGGGACCTCACACTTTCT 420
Db      566 ATCACAGGAATGTTATATCTTCATTCTCATGGCATATTGCACCGGGACCTCACACTCTCT 625

Qy      421 AACCTCCTACTGACTCGTAATATGAACATCAAGATTGCTGATTTTGGGCTGGCAACTCAA 480
Db      626 AACATCTTACTTACGCGGAATATGAACATAAAAATTGCTGACTTTGGACTAGCAACGCAG 685

Qy      481 CTGAAAATGCCACATGAAAAGCACTATACATTATGTGGAACTCCTAACTACATTTCACCA 540
Db      686 TTGAATATGCCACATGAAAAGCACTATACACTCTGTGGGACTCCTAATTATATTTCACCA 745

Qy      541 GAAATTGCCACTCGAAGTGCACATGGCCTTGAATCTGATGTTTGGTCCCTGGGCTGTATG 600
Db      746 GAAATTGCAACTCGAAGTGCACATGGACTTGAATCTGATATTTGGTCATTGGGCTGTATG 805

Qy      601 TTTTATACATTACTTATCGGGAGACCACCCTTCGACACTGACACAGTCAAGAACACATTA 660
Db      806 TCTTATACGTTACTTATTGGAAGACCACCTTTTGACACTGACACAGTCAAGAACACATTG 865

Qy      661 AATAAAGTAGTATTGGCAGATTATGAAATGCCATCTTTTTTGTCAATAGAGGCCAAGGAC 720
Db      866 AACAAAGTAGTCCTGGCAGATTATGAAATGCCAGCCTTTTTGTCACGAGAGGCCCAGGAC 925

Qy      721 CTTATTCACCAGTTACTTCGTAGAAATCCAGCAGATCGTTTAAGTCTGTCTTCAGTATTG 780
Db      926 CTTATCCACCAGTTACTTCGTAGAAACCCTGCAGATCGGTTAAGTCTGTCTTCTGTGTTG 985

Qy      781 GACCATCCTTTTATGTCCCGAAATTCTTCAACAAAAAGTAAAGATTTAGGAACTGTGGAA 840
Db      986 GACCATCCTTTCATGTCACGAAATCCTTCACCAAAGAGTAAAGACGTAGGGACTGTAGAG 1045

Qy      841 GACTCAATTGATAGTGGGCATGCCACAATTTCTACTGCAATTACAGCTTCTTCCAGTACC 900
Db     1046 GACTCAATGGATAGTGGGCATGCTACACTTTCCACAACAATTACAGCCTCTTCTGGTACC 1105

Qy      901 AGTATAAGTGGTAGTTTATTTGACAAAAGAAGACTTTTGATTGGTCAGCCACTCCCAAAT 960
Db     1106 AGTTTGAGTGGCAGCCTACTTGAC---AGAAGACTTTTGGTTGGTCAACCACTTCCAAAT 1162

Qy      961 AAAATGACTGTATTTCCAAAGAATAAAAGTTCAACTGATTTTTCTTCTTCAGGAGATGGA 1020
Db     1163 AAAATTACTGTATTTCAAAAAAATAAAAATTCAAGTGACTT---TTCTTCAGGAGATGGA 1219

Qy     1021 AACAGTTTTTATACTCAGTGGGGAAAT------CAAGAAACCAGTAATAGTGGAAGGGGA 1074
Db     1220 AGTAATTTTTGTACTCAATGGGGAAATCCAGAACAAGAAGCTAATAGTAGGGGACGGGGG 1279
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